

REMARKS

Applicants have amended their claims in order to further clarify the definition of the present invention. Specifically, Applicants have amended claim 1 to recite that the extruded frame member includes a plate having a width of the plate and a length, with the length extending in an extruded direction. Claim 1 has been further amended to recite that at least one end portion of the width of the extruded frame member is provided with a protrusion portion which, inter alia, extends beyond the at least one end portion of the width, in a direction of the width. Claim 3 has been amended to recite that the extruded frame member includes a plate having a width and a length, with the length extending in an extruded direction; and with a face of one side of the plate, at at least one end portion of the width of the extruded frame member, being provided with the triangular shaped groove. Claim 4 has been amended to recite "the" extruded frame member; and to recite that the triangular shaped groove is provided to a specified face of an outer side of the protrusion portion.

In addition, Applicants are adding new claims 5-13 to the application. Claim 5, dependent on claim 1, recites that the protrusion portion has an inner face of a part of the protrusion portion extending beyond the at least one end portion of the width, with this inner face being opposite to an opposed face which faces in a same direction as the outer side of the plate, and wherein there is a gap between an extension of the outer side of the plate and the inner face, in

the thickness direction. Claim 6, also dependent on claim 1, recites that the extruded frame member is adapted to be friction stir welded to another frame member, with a part of the protrusion portion extending beyond the at least one end portion of the width overlapping the another frame member during the friction stir welding. Claim 7, dependent on claim 1, recites that the at least one end portion has an end face which is exposed, with the protrusion portion extending above and beyond the end face, in the direction of the width; and claims 8 and 9, dependent respectively on claims 2 and 4, each recites that the protrusion portion has two ends in the width direction, and that a distance between one end of the protrusion portion and the triangular shaped groove, in the direction of the width, is substantially the same as a distance between the other end of the protrusion portion and the triangular shaped groove, in the direction of the width. Claim 10, dependent on claim 4, recites that the protrusion portion extends beyond the at least one end portion in a direction of the width; and claim 11 recites the same subject matter as expressly set forth in claim 8, but is dependent on claim 10. Claims 12 and 13, dependent respectively on claims 4 and 3, respectively recites that the at least one end portion has an end face, with the triangular shaped groove being provided to the face of the outer side of the protrusion portion over this end face; and recites that the extruded frame member is capable of being friction stir welded to another frame member at the at least one end portion.

In connection with amendments to previously considered claims, and in connection with the present newly added claims, note, for example, Figs. 18 and 20, and the corresponding description, for example, on pages 23-26 of Applicants' specification.

Applicants respectfully traverse the rejection of claims 1, 3 and 4 under the second paragraph of 35 USC 112, as being indefinite, as set forth in Item 2 on page 2 of the Office Action mailed February 13, 2002. In particular, the expressions in claims 1 and 3, quoted in the second paragraph of Item 2 on page 2 of the Office Action mailed February 13, 2002, which the Examiner considered to be vague and indefinite, have been deleted. Moreover, claims 1 and 3 have been amended to recite that the extruded frame member includes a plate having a width and a length, with at least one end portion "of the width" being defined, and a direction "of the width" being recited. It is respectfully submitted that these present recitations with respect to the extruded frame member, and in particular recitations with respect to the width direction, are sufficiently definite so as to satisfy the requirements of the second paragraph of 35 USC 112.

Moreover, in connection with rejection of claim 4 under the second paragraph of 35 USC 112, note that claim 3 recites "a face of one side of the plate"; moreover, claim 4 recites "a" face of "an" outer side of the protrusion portion, which faces in a same direction as said face of the one side of the plate.

It is respectfully submitted that, as presently amended, claim 4 sufficiently defines the face of the protrusion portion having the triangular shaped groove, providing a sufficiently definite recitation satisfying the requirements of the second paragraph of 35 USC 112.

In view of all of the foregoing, reconsideration and withdrawal of the rejection of claims under the second paragraph of 35 USC 112, is respectfully requested.

Applicants respectfully submit that all of the claims presented for consideration by the Examiner patentably distinguish over the teachings of the reference as applied by the Examiner in rejecting claims in the Office Action mailed February 13, 2002, that is, the teachings of U.S. Patent No. 5,685,229 to Ohara, et al., under the provisions of 35 USC 102 and 35 USC 103.

It is respectfully submitted that this reference as applied by the Examiner would have neither taught nor would have suggested such an extruded frame member for use in friction stir welding as in the present claims, having the recited plate having a width, with at least one end portion of the width of the plate of the extruded frame member being provided with a protrusion portion which protrudes from an outer side and extends beyond the at least one end portion of the width, in a direction of the width. See claim 1.

In addition, it is respectfully submitted that this reference would have neither taught nor would have suggested the extruded frame member as in the

present claims, having the protrusion portion which extends beyond the at least one end portion of the width, and wherein the protrusion portion has an inner face of a part of the protrusion portion extending beyond the at least one end portion of the width, the inner face being opposite to an opposed face which faces in a same direction as the outer side of the plate, and wherein there is a gap between an extension of the outer side of the plate and the inner face, in the thickness direction (see claim 5); or wherein the at least one end portion has an end face which is exposed, with the protrusion portion extending above and beyond the end face, in the direction of the width (see claim 7).

Furthermore, it is respectfully submitted that the applied reference would have neither taught nor would have suggested such extruded frame member as in the present claims, which is adapted to be friction stir welded to another frame member at the end portion (note claim 6; see also claim 13), with a part of the protrusion portion extending beyond the at least one end portion of the width overlapping the another frame member during the friction stir welding (see claim 6).

Furthermore, it is respectfully submitted that this reference would have neither taught nor would have suggested such an extruded frame member for use in friction stir welding, as in the present claims, having, inter alia, the plate having the width, with a face of one side of the plate, at at least one end portion of the width of the extruded frame member, being provided with a triangular

shaped groove (see claim 3; note also claims 2, 3 and 10, reciting the groove together with the protrusion portion, e.g., extending beyond the end portion of the width); in particular, the location of the triangular shaped groove relative to the two ends of the protrusion portion, as in claims 8, 9 and 11, or wherein the triangular shaped groove is provided to the face of the outer side of the protrusion portion over the end face of the end portion (see claim 12).

The present invention is directed to an extruded frame member for use in friction stir welding, whereby a dent can be avoided in the upper face of the joining region of the weld even if a gap occurs between end faces of abutting two members to be joined. In particular, the present invention is directed to such extruded frame member which can be formed easily and effectively, by extrusion, and wherein friction stir welding thereof can easily be provided. Applicants have found that by use of the extruded frame member having the protrusion portion according to the present invention, which extends beyond end portion of the extruded frame member so as to, for example, overlap the end portion of another frame member to be friction stir welded to the extruded frame member, protrusion portions need not be provided to both frame members, yet a protrusion portion can be provided which avoids the aforementioned dent.

Moreover, through use of the triangular-shaped groove according to the present invention, location for insertion of the rotary tool of the friction stir welding can easily be sensed, so that the friction stir welding can be accurately

performed notwithstanding that the protrusion portion overlies the abutting portion between the extruded frame member and another frame member to be friction stir welded to each other.

Ohara, et al. discloses a railway car body structure, which includes an underframe, two side units, a roof unit and two end units, with at least one structural member constituting these units including plate members each being formed by joining two surface materials, a core material and binding materials through metal-to-metal bonding, thickness of one of the two surface materials of the plate member on an outdoor side of the car body being greater than the thickness of the other surface material on an indoor side. See column 2, lines 53-62. Note also column 4, lines 27-49, describing each side plate member which is produced utilizing binding materials, by brazing.

Noting particularly flange 56f of the binding material 56, as referred to by the Examiner in the last paragraph on page 3 of the Office Action mailed February 13, 2002, it is respectfully submitted that this reference does not disclose, nor would have suggested, the protrusion portion as presently defined. That is, it is respectfully submitted that Ohara, et al. discloses in reference character 56f (note Fig. 3) a weld structure between abutting members, and would have neither taught nor would have suggested the structure according to the present invention including the protrusion portion extending beyond at least one end portion of the width of the plate of the extruded frame member, in a

direction of the width; or the other aspects of the present invention as discussed in the foregoing.

Furthermore, reference by the Examiner to column 10, lines 58-62 of Ohara, et al., as describing a groove, is noted. It is respectfully submitted, however, that this "groove" referred to in Ohara, et al. would have neither taught nor would have suggested the triangular-shaped groove provided at at least one end portion of the width of the extruded frame member, much less the groove in the protrusion portion as defined in the present claims.

Contentions by the Examiner in the first paragraph on page 4 of the Office Action mailed February 13, 2002, are noted. It is respectfully submitted that the triangular shaped groove is particularly useful for sensing location for insertion of the rotary tool, noting that the triangular portion ends in a point. Particularly in light of advantages achieved by the present invention, for example, in sensing location for insertion of the rotary tool, it is respectfully submitted that Ohara, et al. would have neither taught nor would have suggested the presently claimed subject matter.

In view of the foregoing comments and amendments, reconsideration and allowance of all claims remaining in the application are respectfully requested.

Attached hereto is a marked-up version of the changes made to the claims by the current Amendment. This marked-up version is on the attached pages, the first page of which is captioned "VERSION WITH MARKINGS TO SHOW

CHANGES MADE”.

To the extent necessary, Applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to the Deposit Account No. 01-2135 (Case No. 503.35933VV5) and please credit any excess fees to such Deposit Account.

Respectfully submitted,

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A handwritten signature in black ink, appearing to read "William I. Solomon", with a long horizontal flourish extending to the right.

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VERSION WITH MARKINGS TO SHOW CHANGES MADE
IN THE CLAIMS

Please amend the claims presently in the application as follows:

1. (Amended) An extruded frame member for use in friction stir welding, said extruded frame member including a plate having a width and a length, the length extending in an extruded direction, wherein:

[when viewed from an extruded direction of the extruded frame member,] at least one end portion[, in a width direction,] of the width of the plate of the extruded frame member is provided with a protrusion portion which protrudes from an outer side, in a thickness direction of the plate, from said plate of said extruded frame member, and extends beyond the at least one end portion of the width, in a direction of the width; and

[protruding from said outer side of said plate,] said protrusion portion extends substantially in parallel to [an] said at least one end portion of said plate of said extruded frame member.

3. (Amended) An extruded frame member for use in friction stir welding, said extruded frame member including a plate having a width and a length, the length extending in an extruded direction, wherein:

[when viewed from an extruded direction of said extruded frame

member,] a face of one side of the plate, at at least one end portion [in a width direction] of the width of the extruded frame member, is provided with a triangular shaped groove.

4. (Amended) [An] The extruded frame member according to claim 3, wherein:

in said at least one end portion, a protrusion portion is provided which protrudes from said face of the one side of the plate, in a thickness direction of said extruded frame member; and

said triangular shaped groove is provided to a face of an outer side of said protrusion portion, [said triangular shaped groove is provided] which faces in a same direction as said face of the one side of the plate.